

**Course Syllabus for MHC 498**  
**The Coming (North) American Decade(s)?**  
**Fall 2013**

Class Time: Mondays 3:00 – 5:40pm, Room 308 (3<sup>rd</sup> Floor North Classroom)

**Professor David H. Petraeus** (david.petraeus@macaulay.cuny.edu)  
Office Hours: Monday 6-7 pm

Teaching Assistants: **Yu Aoki** (yu.aoki@macaulay.cuny.edu),  
Office Hours: Wednesday 1:30-2:30pm  
**Matt Murray** (matt.murray@macaulay.cuny.edu).  
Office Hours: Monday 6-7pm

Instructional Technology Fellow: **Chris Caruso** (chris.caruso@macaulay.cuny.edu).  
Office Hours: Monday 1-3pm

Course Website: <http://macaulay.cuny.edu/eportfolios/petraeus13>

**I. Course Description**

This seminar will seek to answer the question, "Are we on the threshold of the new (North) American decade(s)? To do so, we will: survey the global economic situation; examine the ongoing energy, manufacturing, life sciences, and information technology "revolutions" in the United States; assess the implications each revolution has for the U.S. and the global economy; and determine the policies, practices, regulations, and laws needed to enable the U.S. to capitalize on the opportunities presented by the revolutions and thereby to contribute to the global economic recovery from the Great Recession.

**II. Course Expectations and Requirements**

This course is a undergraduate level discussion seminar for students interested in understanding how well-designed public policy can enable (North) America to capitalize on the tide of science and technology revolutions that will shape the coming decade(s). The focus of the course will be on the assigned readings, seminar discussions, written assignments, and oral presentations.

Student participation in the seminar and discussion groups will substantially enrich the learning experience. Effective class participation requires that students complete the assigned readings before coming to class. Students are encouraged to ask questions, share their insights, and treat their classmates' participation with professional courtesy.

With class participation, self-awareness is essential. If you are someone who regularly speaks in class, make sure you are giving others the space to participate. Alternatively, if you tend not to participate often in class, push yourself to engage. In other words, students should adopt a "step up, step back" approach to participation to ensure that everyone has ample opportunities to contribute.

Students are expected to uphold the values of the Honors Integrity Pledge in this seminar:  
<http://macaulay.cuny.edu/community/handbook/policies/honors-integrity/>

### III. Standard Operating Procedures (SOPs) for Assignments

All assignments must be completed by the date indicated in order to receive full credit. Students are required to submit their assignment by 6:00pm on the day it is due. Failure to do so will result in an incomplete grade. Additionally, all assignments must follow the formatting guidelines distributed in class.

### IV. Grading

|                                       |     |
|---------------------------------------|-----|
| Seminar Participation:                | 20% |
| Discussion Group Participation:       | 20% |
| Policy Memo I – Policy Recommendation | 20% |
| Policy Memo II – National Strategy    | 40% |

### V. Class Schedule

*All readings must be completed by the day of class for which the reading is assigned. Similarly, three classes have an assigned video which must be watched before class. Please note that the schedule below may change to accommodate student interest. We will give advance notice of any changes.*

#### **Week 1 – September 9: Introduction and Overview**

- Introduction to the main ideas of the course
- Overview of course requirements, presentation schedule

#### Readings:

|   |                                                                                                                                                                                                                                                                                                                                                                    |                        |           |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------|
| 1 | Petraeus, David and Michael O’Hanlon. “An American future filled with promise.” <i>The Washington Post</i> . 2013                                                                                                                                                                                                                                                  |                        | 2 pages   |
| 2 | Haass, Richard. “How to build a second American century.” <i>The Washington Post</i> . 2013. <a href="http://articles.washingtonpost.com/2013-04-26/opinions/38832741_1_20th-century-haass-gdp">http://articles.washingtonpost.com/2013-04-26/opinions/38832741_1_20th-century-haass-gdp</a>                                                                       |                        | 2 pages   |
| 3 | Haas, Richard. <i>Foreign Policy Begins at Home</i> . 2013.                                                                                                                                                                                                                                                                                                        | pp. 11 – 73; 121 – 164 | 106 pages |
| 4 | Schwenninger, Sherle and Samuel Sherraden. “The Promise of (and Obstacles to) America’s Emerging Growth Story.” <i>New America Foundation</i> . 2012.<br><a href="http://newamerica.net/sites/newamerica.net/files/policydocs/America_Emerging_Growth_Story.pdf">http://newamerica.net/sites/newamerica.net/files/policydocs/America_Emerging_Growth_Story.pdf</a> | 29 slides              | N/A       |
| 5 | McKinsey Global Institute. <i>Disruptive technologies: Advances that will transform life, business, and the global economy</i> . 2013.                                                                                                                                                                                                                             | pp. 1-9                | 10 pages  |
| 6 | Shultz, George. “The North American Global Powerhouse.” <i>The</i>                                                                                                                                                                                                                                                                                                 |                        | 2 pages   |

|   |                                                                                                                                                                                                                                                                                                                                                     |  |           |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------|
|   | <i>Wall Street Journal</i> . July 11, 2013.<br><a href="http://online.wsj.com/article/SB10001424127887324637504578566192239796864.html">http://online.wsj.com/article/SB10001424127887324637504578566192239796864.html</a>                                                                                                                          |  |           |
| 7 | Mazzucato, Mariana. "The myth of the 'meddling' state." <i>Public Finance International</i> . June 25, 2013.<br><a href="http://www.publicfinanceinternational.org/features/2013/06/the-myth-of-the-meddling-state-nothing-ventured">http://www.publicfinanceinternational.org/features/2013/06/the-myth-of-the-meddling-state-nothing-ventured</a> |  | 2 pages   |
|   |                                                                                                                                                                                                                                                                                                                                                     |  | 124 pages |

## Week 2 – September 16: State of the Global Economy

- The Great Recession
- Economic growth projections for the short-term and long-term
- Reasons for optimism and pessimism for (North) America
- The global drivers of growth

### Readings:

|   |                                                                                                                                                                                                                                                                                                                                                             |                           |          |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------|
| 1 | Chilukuri, Vivek. "Global Economy – Key Facts, Trends & Implications." 2013                                                                                                                                                                                                                                                                                 |                           | 12 pages |
| 2 | National Intelligence Council. <i>Global Trends 2030: Alternative Worlds</i> . 2012.<br><a href="http://www.dni.gov/files/documents/GlobalTrends_2030.pdf">http://www.dni.gov/files/documents/GlobalTrends_2030.pdf</a>                                                                                                                                     | pp. i – xiv;<br>107 - 133 | 41 pages |
| 3 | The Economist. "Special report: America's competitiveness" 2013.<br><a href="http://www.economist.com/news/special-report/21573229-political-gridlock-may-be-bad-americas-economy-says-edward-mcbride">http://www.economist.com/news/special-report/21573229-political-gridlock-may-be-bad-americas-economy-says-edward-mcbride</a>                         | 7 articles                | 34 pages |
| 4 | McKinsey Global Institute. <i>Growth and renewal in the United States: Retooling America's economic engine</i> . February 2011.<br><a href="http://www.mckinsey.com/insights/americas/growth_and_renewal_in_the_us">http://www.mckinsey.com/insights/americas/growth_and_renewal_in_the_us</a>                                                              | pp. 10-14                 | 5 pages  |
| 5 | Cowen, Tyler. "Emerging Markets, Hitting a Wall." <i>The New York Times</i> . June 22, 2013.<br><a href="http://www.nytimes.com/2013/06/23/business/emerging-markets-hitting-a-wall.html?ref=world&amp;r=0">http://www.nytimes.com/2013/06/23/business/emerging-markets-hitting-a-wall.html?ref=world&amp;r=0</a>                                           |                           | 2 pages  |
| 6 | IMF. "World Economic Outlook Update: Growing Pains." <a href="https://www.imf.org/external/pubs/ft/weo/2013/update/02/">https://www.imf.org/external/pubs/ft/weo/2013/update/02/</a>                                                                                                                                                                        |                           | 3 pages  |
| 7 | Wassener, Bettina and Chris Buckley. "China's GDP growth slows as government changes gears." <i>The New York Times</i> .<br><a href="http://www.nytimes.com/2013/07/16/business/global/chinas-gdp-growth-slows-to-7-5.html?pagewanted=print">http://www.nytimes.com/2013/07/16/business/global/chinas-gdp-growth-slows-to-7-5.html?pagewanted=print</a>     |                           | 4 pages  |
| 8 | Roubini, Nouriel. "Trouble in Emerging Market Paradise". Project Syndicate.<br><a href="http://www.project-syndicate.org/commentary/slower-growth-ahead-for-the-brics-and-other-emerging-markets-by-nouriel-roubini">http://www.project-syndicate.org/commentary/slower-growth-ahead-for-the-brics-and-other-emerging-markets-by-nouriel-roubini</a>        |                           | 3 pages  |
| 9 | Smith, Patrick. "The Global Economy Takes a Baby Step Forward". <i>The Fiscal Times</i> . July 29, 2013.<br><a href="http://www.thefiscaltimes.com/error.aspx?item=%2fcolumns%2f2013%2f07%2f29%2fthe-global-economytakes-a-baby-step-">http://www.thefiscaltimes.com/error.aspx?item=%2fcolumns%2f2013%2f07%2f29%2fthe-global-economytakes-a-baby-step-</a> |                           | 2 pages  |

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|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------|
|    | <a href="#">forward&amp;user=extranet%5cAnonymous&amp;site=website#page1</a>                                                                                                                                                                                                                                                        |  |           |
| 10 | Teslik, Lee Hudson. "NAFTA's Economic Impact." Council on Foreign Relations. July 7, 2009. <a href="http://www.cfr.org/world/naftas-economic-impact/p15790">http://www.cfr.org/world/naftas-economic-impact/p15790</a>                                                                                                              |  | 6 pages   |
| 11 | The Economist. "A rickety rebound." <i>The Economist</i> . August 17, 2013. <a href="http://www.economist.com/news/leaders/21583686-global-economy-gaining-momentum-only-america-acceleration-likely-last">http://www.economist.com/news/leaders/21583686-global-economy-gaining-momentum-only-america-acceleration-likely-last</a> |  | 3 pages   |
|    |                                                                                                                                                                                                                                                                                                                                     |  | 115 pages |

### Week 3 – September 23: The Energy Revolution I

- Global energy resources and consumption
- Shale gas and liquefied natural gas exports, including new regulations and policies

Video: The Energy Revolution Video

#### Readings:

|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                              |            |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------|
| 1 | Chan, Gabriel. "Energy – Key Facts, Trends & Implications." 2013                                                                                                                                                                                                                                                                                                                                                                                                                               |                                              | 10 pages   |
| 2 | International Energy Agency. <i>World Energy Outlook 2012</i> . 2012. <a href="http://www.iea.org/Textbase/npsum/weo2012sum.pdf">http://www.iea.org/Textbase/npsum/weo2012sum.pdf</a>                                                                                                                                                                                                                                                                                                          | Executive Summary                            | 7 pages    |
| 3 | Newell, Richard and Stuart Iler. "The Global Energy Outlook" in <i>Energy &amp; Security, 2<sup>nd</sup> edition: Strategies for a World in Transition</i> . 2013                                                                                                                                                                                                                                                                                                                              | pp. 1-36                                     | 36 pages   |
| 4 | BP. <i>BP Statistical Review of World Energy</i> . 2012. <a href="http://www.bp.com/assets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_review_2011/STAGI/NG/local_assets/pdf/statistical_review_of_world_energy_full_report_2012.pdf">http://www.bp.com/assets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_review_2011/STAGI/NG/local_assets/pdf/statistical_review_of_world_energy_full_report_2012.pdf</a> | pp. 1 – 5; skim rest                         | 5 pages    |
| 5 | IHS CERA. "America's New Energy Future: The Unconventional Oil and Gas Revolution and the U.S. Economy." 2012. <a href="http://marcelluscoalition.org/wp-content/uploads/2012/10/IHS_Americas-New-Energy-Future.pdf">http://marcelluscoalition.org/wp-content/uploads/2012/10/IHS_Americas-New-Energy-Future.pdf</a>                                                                                                                                                                           | Key Findings, Executive Summary (pp. 2 – 9)  | 8 pages    |
| 6 | MIT. <i>The Future of Natural Gas</i> . 2011. <a href="http://mitei.mit.edu/system/files/NaturalGas_ExecutiveSummary.pdf">http://mitei.mit.edu/system/files/NaturalGas_ExecutiveSummary.pdf</a>                                                                                                                                                                                                                                                                                                | pp. 1 – 16                                   | 16 pages   |
| 7 | Ebinger, Charles and Govinda Avasarala. "Natural Gas Liquids." Brookings Energy Security Initiative, Natural Gas Task Force. <a href="http://www.brookings.edu/~media/Research/Files/Reports/2013/04/01%20natural%20gas%20ebinger%20avasara/Natural%20Gas%20Briefing%201%20pdf.pdf">http://www.brookings.edu/~media/Research/Files/Reports/2013/04/01%20natural%20gas%20ebinger%20avasara/Natural%20Gas%20Briefing%201%20pdf.pdf</a>                                                           | pp. 3-14                                     | 12 pages   |
| 8 | Bryngelson, Rob, Michael Levi, David Mallino, W. David Montgomery, and Michael Ratner. "Natural Gas Exports: Economic and Geopolitical Opportunities." Testimonies to the Committee on Foreign Affairs, Subcommittee on Terrorism, Nonproliferation, and Trade. <a href="http://docs.house.gov/Committee/Calendar/ByEvent.aspx?EventID=100776">http://docs.house.gov/Committee/Calendar/ByEvent.aspx?EventID=100776</a>                                                                        | Choose 3 of the 5 witness statements to read | ~ 20 pages |

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|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------------|
| 9  | The Economist. “The future of oil: Yesterday’s fuel.” <i>The Economist</i> . August 3, 2013.<br><a href="http://www.economist.com/news/leaders/21582516-worlds-thirst-oil-could-be-nearing-peak-bad-news-producers-excellent?zid=298&amp;ah=0bc99f9da8f185b2964b6cef412227be">http://www.economist.com/news/leaders/21582516-worlds-thirst-oil-could-be-nearing-peak-bad-news-producers-excellent?zid=298&amp;ah=0bc99f9da8f185b2964b6cef412227be</a> |                                            | 3 pages      |
| 10 | Krauss, Clifford and Nelson Schwartz. “Foreseeing trouble in exporting natural gas.” <i>The New York Times</i> . August 15, 2013.<br><a href="http://www.nytimes.com/2013/08/16/business/energy-environment/foreseeing-trouble-in-exporting-natural-gas.html?pagewanted=all&amp;r=0">http://www.nytimes.com/2013/08/16/business/energy-environment/foreseeing-trouble-in-exporting-natural-gas.html?pagewanted=all&amp;r=0</a>                        |                                            | 5 pages      |
| 11 | OPTIONAL: Tom Ashbrook. On Point podcast, “The North American Energy Revolution.” 2013.<br><a href="http://onpoint.wbur.org/2013/05/20/north-american-energy">http://onpoint.wbur.org/2013/05/20/north-american-energy</a>                                                                                                                                                                                                                            |                                            | (46 minutes) |
| 12 | OPTIONAL: GEA. <i>Global Energy Assessment – Toward a Sustainable Future</i> . 2012.<br><a href="http://www.iiasa.ac.at/web/home/research/Flagship-Projects/Global-Energy-Assessment/GEA-Summary-web.pdf">http://www.iiasa.ac.at/web/home/research/Flagship-Projects/Global-Energy-Assessment/GEA-Summary-web.pdf</a>                                                                                                                                 | Preface and Key Findings (pp. xii - xviii) | (7 pages)    |
| 13 | OPTIONAL: Lipschultz, Marc. “Historic Opportunities from the Shale Gas Revolution.” KKR Report. 2012.<br><a href="http://www.kkr.com/files/pdf/KKR_report-20121113-Historic_Opportunities_from_the_Shale_Gas_Revolution.pdf">http://www.kkr.com/files/pdf/KKR_report-20121113-Historic_Opportunities_from_the_Shale_Gas_Revolution.pdf</a>                                                                                                            | pp. 3-21                                   | (19 pages)   |
|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                            | 122 pages    |

#### Week 4 – September 30: The Energy Revolution II

- Energy security and geopolitics
- Energy and the environment; climate change

#### Readings:

|   |                                                                                                                                                                                                                                                                                                                                                                                |                              |                 |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------|
| 1 | Congressional Budget Office. “Energy Security in the United States.” May 2012.<br><a href="http://www.cbo.gov/sites/default/files/cbofiles/attachments/05-09-EnergySecurity.pdf">http://www.cbo.gov/sites/default/files/cbofiles/attachments/05-09-EnergySecurity.pdf</a>                                                                                                      | Summary, pp. 1-28            | 31 pages        |
| 2 | Gjeltén, Tom. “Energy Independence for U.S.?: Try energy security.” <i>NPR</i> . <a href="http://www.npr.org/2012/10/25/163573768/energy-independence-for-u-s-try-energy-security">http://www.npr.org/2012/10/25/163573768/energy-independence-for-u-s-try-energy-security</a>                                                                                                 | Read (or listen)             | 2 pages (5 min) |
| 3 | The Economist. “Energy reform in Mexico: Giving it both barrels.” <i>The Economist</i> . August 17, 2013.<br><a href="http://www.economist.com/news/americas/21583664-government-has-made-promising-start-it-may-struggle-bring-historic-reform">http://www.economist.com/news/americas/21583664-government-has-made-promising-start-it-may-struggle-bring-historic-reform</a> |                              | 3 pages         |
| 4 | Yergin, Daniel. <i>The Prize</i> . 2003.                                                                                                                                                                                                                                                                                                                                       | Ch. 26, 29                   | 47 pages        |
| 5 | National Climate Assessment and Development Advisory Committee. <i>NCADAC Draft Climate Assessment Report</i> . January 2013. <a href="http://ncadac.globalchange.gov/download/NCAJan11-2013-publicreviewdraft-chap1-execsum.pdf">http://ncadac.globalchange.gov/download/NCAJan11-2013-publicreviewdraft-chap1-execsum.pdf</a>                                                | Executive Summary (pp. 3-14) | 12 pages        |
| 6 | Wallach, Philip. “U.S. regulation of greenhouse gas emissions.” <i>Governance Studies at Brookings</i> . October 2012.                                                                                                                                                                                                                                                         | all                          | 13 pages        |

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|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------|
|    | <a href="http://www.brookings.edu/~media/Research/Files/Papers/2012/10/26%20climate%20change%20wallach/26%20climate%20change%20wallach.pdf">http://www.brookings.edu/~media/Research/Files/Papers/2012/10/26%20climate%20change%20wallach/26%20climate%20change%20wallach.pdf</a>                               |                  |            |
| 7  | Cropper, Maureen. "The Hidden Costs of Producing and Consuming Energy." 2010. <a href="http://www.rff.org/Publications/WPC/Pages/The-Hidden-Costs-of-Producing-and-Consuming-Energy.aspx">http://www.rff.org/Publications/WPC/Pages/The-Hidden-Costs-of-Producing-and-Consuming-Energy.aspx</a>                 | all              | 3 pages    |
| 8  | DOE. <i>U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather</i> . July 2013. <a href="http://energy.gov/sites/prod/files/2013/07/f2/20130710-Energy-Sector-Vulnerabilities-Report.pdf">http://energy.gov/sites/prod/files/2013/07/f2/20130710-Energy-Sector-Vulnerabilities-Report.pdf</a> | Pp. i-iii        | 3 pages    |
| 9  | OPTIONAL: Intergovernmental Panel on Climate Change. <i>Synthesis Report: Summary for Policymakers</i> . 2007. <a href="http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf">http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf</a>                                                  | pp. 2-22         | (21 pages) |
| 10 | OPTIONAL: Nordhaus, William. <i>A Question of Balance: Weighing the Options on Global Warming Policies</i> . 2008. <a href="http://www.econ.yale.edu/~nordhaus/homepage/Balance_2nd_proofs.pdf">http://www.econ.yale.edu/~nordhaus/homepage/Balance_2nd_proofs.pdf</a>                                          | Ch. 1 (pp. 1–29) | (29 pages) |
|    |                                                                                                                                                                                                                                                                                                                 |                  | 114 pages  |

### Week 5 – October 7: Case Study Discussion Group – Keystone XL

- How important will the Keystone XL pipeline be as a part of North America's energy, environmental, and economic strategies?
- Why do you think some advocacy and industry groups have elevated the Keystone XL pipeline debate to the national stage?
- Should the Keystone XL pipeline be built, and if so, what is the politically-feasible path forward to achieve this end?
- Why has the Obama administration spent so long deliberating this issue relative to other similar issues? Is the lengthy debate likely to lead to a better policy decision?
- How important of a role have scientists and experts played in the debate relative to politicians and self-interested parties?

### Readings:

|   |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                 |          |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|----------|
| 1 | Congressional Research Service. "Oil sands and the Keystone XL Pipeline: Background and selected environmental issues." February 2013. <a href="http://www.fas.org/sgp/crs/misc/R42611.pdf">http://www.fas.org/sgp/crs/misc/R42611.pdf</a>                                                                                                                                                                              | all                             | 49 pages |
| 2 | Knittel, Christopher. "If You Build It: The Keystone XL Pipeline and Small Business Job Growth." Testimony to U.S. House Committee on Small Business, Subcommittee on Agriculture, Energy, and Trade. 2013. <a href="http://smallbusiness.house.gov/uploadedfiles/5-16-2013_testimony_christopher_knittel_final.pdf">http://smallbusiness.house.gov/uploadedfiles/5-16-2013_testimony_christopher_knittel_final.pdf</a> |                                 | 5 pages  |
| 3 | U.S. Department of State. "Draft Supplemental Environmental Impact Statement for the Keystone XL Project" <a href="http://keystonepipeline-xl.state.gov/documents/organization/205719.pdf">http://keystonepipeline-xl.state.gov/documents/organization/205719.pdf</a>                                                                                                                                                   | read intro (pp. 1-3), skim rest | 3+ pages |
| 4 | Juliano, Nick. "EPA finds State Dept.'s latest review 'insufficient,'" <i>Greenwire</i> . <a href="http://www.eenews.net/eedaily/stories/1059979921">http://www.eenews.net/eedaily/stories/1059979921</a>                                                                                                                                                                                                               |                                 | 3 pages  |
| 5 | Vietor, Richard. "Keystone XL Pipeline." HBS Case Collection.                                                                                                                                                                                                                                                                                                                                                           |                                 | 24 pages |

|   |                                                                                                                                                                                                                                                                                                                                                          |                   |             |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------|
|   | 2012. <a href="http://www.hbs.edu/faculty/Pages/item.aspx?num=43345">http://www.hbs.edu/faculty/Pages/item.aspx?num=43345</a>                                                                                                                                                                                                                            |                   |             |
| 6 | National Research Council. <i>Effects of Diluted Bitumen on Crude Oil Transmission Pipelines</i> . 2013<br><a href="http://www.nap.edu/catalog.php?record_id=18381">http://www.nap.edu/catalog.php?record_id=18381</a>                                                                                                                                   | Executive Summary | 2 pages     |
| 7 | Hansen, James. "Keystone XL: The pipeline to disaster." <i>Los Angeles Times</i> . April 2013.<br><a href="http://articles.latimes.com/2013/apr/04/opinion/la-oe-hansen-keystone-obama-20130404">http://articles.latimes.com/2013/apr/04/opinion/la-oe-hansen-keystone-obama-20130404</a>                                                                |                   | 1 page      |
| 8 | Lizza, Ryan. "The President and the Pipeline." <i>The New Yorker</i> . September 16, 2013. pp. 38-51.<br><a href="http://www.newyorker.com/reporting/2013/09/16/130916fa_fact_lizza">http://www.newyorker.com/reporting/2013/09/16/130916fa_fact_lizza</a>                                                                                               |                   | 13 pages    |
| 9 | OPTIONAL: choose other testimonies to read from the Subcommittee on Agriculture, Energy and Trade hearing on "If You Build It: The Keystone XL Pipeline and small business job growth."<br><a href="http://smallbusiness.house.gov/calendar/eventsingle.aspx?EventID=326584">http://smallbusiness.house.gov/calendar/eventsingle.aspx?EventID=326584</a> |                   | (~20 pages) |
|   |                                                                                                                                                                                                                                                                                                                                                          |                   | 87 pages    |

### Week 6 – October 15 (note that class meets on Tuesday): The Life Science Revolution I

- Scientific developments and the advancing frontier
- Genetic sequencing
- Synthetic biology and the integration of engineering and the life sciences
- Stem cells

Video: The Life Sciences Revolution Video

#### Readings:

|   |                                                                                                                                                                                                                                                                                                                         |            |          |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|
| 1 | Mohan, Vivek. "Life Sciences – Key Facts, Trends & Implications." 2013                                                                                                                                                                                                                                                  |            | 10 pages |
| 2 | The Economist. "Special Report: Biology 2.0" 2010.<br><a href="http://www.economist.com/node/16349358">http://www.economist.com/node/16349358</a>                                                                                                                                                                       | 8 articles | 34 pages |
| 3 | Deloitte. <i>2013 Global Life Science Outlook</i> . 2013<br><a href="http://www.deloitte.com/assets/Dcom-Global/Local%20Assets/Documents/LSHC/2013GlobalLifeSciencesSectorReport_112712.pdf">http://www.deloitte.com/assets/Dcom-Global/Local%20Assets/Documents/LSHC/2013GlobalLifeSciencesSectorReport_112712.pdf</a> | pp. 1 – 12 | 12 pages |
| 4 | Nature. "Has the revolution arrived?" <i>Nature</i> . 2010                                                                                                                                                                                                                                                              |            | 2 pages  |
| 5 | Collins, Francis, Eric Green, Alan Guttmacher, and Mark Guyer. "A vision for the future of genomics research." <i>Nature</i> . 2003<br><a href="http://www.genome.gov/Pages/About/vision.pdf">http://www.genome.gov/Pages/About/vision.pdf</a>                                                                          |            | 13 pages |
| 6 | Ledford, Heidi. "The Cancer Genome Challenge." <i>Nature</i> . 2010<br><a href="http://www.genome.gov/Pages/Newsroom/Webcasts/2010ScienceReportersWorkshop/Panel5_TheCancerGenomeChallenge.pdf">http://www.genome.gov/Pages/Newsroom/Webcasts/2010ScienceReportersWorkshop/Panel5_TheCancerGenomeChallenge.pdf</a>      |            | 2 pages  |
| 7 | Kalorama Information. "Stem Cell Markets." 2012.                                                                                                                                                                                                                                                                        | pp. 1 – 20 | 21 pages |
| 8 | Nature. "Five Hard Truths for Synthetic Biology." <i>Nature</i> . 2010.                                                                                                                                                                                                                                                 |            | 3 pages  |
|   |                                                                                                                                                                                                                                                                                                                         |            | 97 pages |



## Week 7 – October 21: The Life Science Revolution II

- Drug development and biosimilars
- Personalized medicine and targeted therapies
- Vaccines
- Ethical issues

### Readings:

|   |                                                                                                                                                                                                                                                                                                                                                          |                   |           |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------|
| 1 | Boston Consulting Group. “What Value-Based Health Care Means for Pharma.” 2012<br><a href="https://www.bcgperspectives.com/content/articles/biopharma_what_value_based_health_care_means_for_pharma/">https://www.bcgperspectives.com/content/articles/biopharma_what_value_based_health_care_means_for_pharma/</a>                                      | pp. 1 – 6         | 6 pages   |
| 2 | Daemmrigh, Arthur. “U.S. Healthcare Reform and the Pharmaceutical Industry” HBS Working Paper. 2011.<br><a href="http://www.hbs.edu/faculty/Publication%20Files/12-015.pdf">http://www.hbs.edu/faculty/Publication%20Files/12-015.pdf</a>                                                                                                                | pp. 1 – 36        | 36 pages  |
| 3 | Presidential Commission for the Study of Bioethical Issues. <i>New Directions: The Ethics of Synthetic biology and emerging technologies</i> . December 2010.<br><a href="http://bioethics.gov/sites/default/files/PCSBI-Synthetic-Biology-Report-12.16.10.pdf">http://bioethics.gov/sites/default/files/PCSBI-Synthetic-Biology-Report-12.16.10.pdf</a> | Executive Summary | 17 pages  |
| 4 | Kalorama Information. “What’s Next for Vaccines.” 2012.                                                                                                                                                                                                                                                                                                  | pp. 1 – 23        | 24 pages  |
| 5 | Kalorama Information. “Pharmaceuticals of the Future.” 2012                                                                                                                                                                                                                                                                                              | pp. 9 – 44        | 36 pages  |
| 6 | PCAST. <i>Report to the President on Propelling Innovation in Drug Discovery, Development, and Evaluation</i> . September 2012.<br><a href="http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-fda-final.pdf">http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-fda-final.pdf</a>                                     | pp. v – xiv       | 10 pages  |
|   |                                                                                                                                                                                                                                                                                                                                                          |                   | 129 pages |

## Week 8 – October 28: Case Study Discussion Group – Stem Cells and Ethics

- Have ethical issues, or the perception of the ethical issues associated with stem cell research, changed significantly in the last 12 years? If so, how? If not, why? What does this mean for the future of stem cell research and
- Last week's reading from the Presidential Commission for the Study of Bioethical Issues presents some the conclusions of a blue-ribbon panel of our nation's leading experts. The list of members is here: <http://bioethics.gov/members>. Is this a sufficiently inclusive body to handle these weighty issues? How can we be sure to incorporate the conclusions of theirs we agree with, and what are the avenues for those that disagree with their conclusions to voice their concerns?

|   |                                                                                                                                                                                                                                                                                                                                                                   |                |         |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------|
| 1 | Yu, Junying and James Thomas. “Embryonic Stem Cells” in <i>Regenerative Medicine 2006</i> .<br><a href="http://stemcells.nih.gov/staticresources/info/scireport/PDFs/Regenerative_Medicine_2006.pdf">http://stemcells.nih.gov/staticresources/info/scireport/PDFs/Regenerative_Medicine_2006.pdf</a>                                                              | pp. 1-8 (skim) | 8 pages |
| 2 | “Stem-cell therapies: Prometheus Unbound.” <i>The Economist</i> . July 6, 2013. <a href="http://www.economist.com/news/science-and-technology/21580440-researchers-have-yet-realise-old-dream-regenerating-organs-they-are">http://www.economist.com/news/science-and-technology/21580440-researchers-have-yet-realise-old-dream-regenerating-organs-they-are</a> |                | 2 pages |



|   |                                                                                                                                                                                                                                                                                                                                                                                    |  |          |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|
| 3 | George W. Bush. “President George W. Bush’s address on stem cell research” in CNN Archives. August 9, 2011.<br><a href="http://archives.cnn.com/2001/ALLPOLITICS/08/09/bush.transcript/">http://archives.cnn.com/2001/ALLPOLITICS/08/09/bush.transcript/</a>                                                                                                                       |  | 4 pages  |
| 4 | NPR Virtual Roundtable on ethics of federal stem cell funding. 6 articles (3 Pro, 3 Con) available at:<br><a href="http://www.npr.org/programs/specials/stemcells/viewpoints.html">http://www.npr.org/programs/specials/stemcells/viewpoints.html</a>                                                                                                                              |  | 12 pages |
| 5 | Simons, Robert. <i>Sydney IVF: Stem Cell Research</i> . HBS Case Study.<br><a href="http://www.hbs.edu/faculty/Pages/item.aspx?num=36833">http://www.hbs.edu/faculty/Pages/item.aspx?num=36833</a> . 2009.                                                                                                                                                                         |  | 22 pages |
| 6 | Fountain, Henry. “One day, growing spare parts inside the body.” <i>The New York Times</i> . September 2012<br><a href="http://www.nytimes.com/2012/09/18/health/research/using-the-body-to-incubate-replacement-organs.html?ref=stemcells&amp;r=0">http://www.nytimes.com/2012/09/18/health/research/using-the-body-to-incubate-replacement-organs.html?ref=stemcells&amp;r=0</a> |  | 5 pages  |
| 7 | Park, Alice. “Scientists report first success in cloning human stem cells.” <i>Time Magazine</i> . May, 2013.<br><a href="http://healthland.time.com/2013/05/15/first-success-in-using-human-egg-to-reprogram-cells-back-to-embryonic-state/">http://healthland.time.com/2013/05/15/first-success-in-using-human-egg-to-reprogram-cells-back-to-embryonic-state/</a>               |  | 2 pages  |
|   |                                                                                                                                                                                                                                                                                                                                                                                    |  | 55 pages |

### Week 9 – November 4: The Advanced Manufacturing Revolution I

- The role of manufacturing in economic growth
- Global trends in manufacturing
- Advanced manufacturing technologies

Video: The Manufacturing Revolution Video

#### Readings:

|   |                                                                                                                                                                                                                                                                                                                                                                                                                     |                        |          |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------|
| 1 | Chilukuri, Vivek. “Advanced Manufacturing – Key Facts, Trends & Implications.” 2013                                                                                                                                                                                                                                                                                                                                 |                        | 10 pages |
| 2 | Advanced Manufacturing Partnership. <i>Capturing Domestic Competitive Advantage in Advanced Manufacturing</i> . Steering Committee Report. 2012.<br><a href="http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast_amp_steering_committee_report_final_july_17_2012.pdf">http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast_amp_steering_committee_report_final_july_17_2012.pdf</a> | pp. 1 – 13             | 13 pages |
| 3 | World Economic Forum Report in collaboration with Deloitte Touche Tohmatsu Limited. <i>The Future of Manufacturing: Opportunities to drive economic growth</i> . 2012.<br><a href="http://www.innovationeasterncape.co.za/download/future_of_manufacturing_2012.pdf">http://www.innovationeasterncape.co.za/download/future_of_manufacturing_2012.pdf</a>                                                           | pp. 3 – 5              | 3 pages  |
| 4 | The Manufacturing Institute. <i>Facts About Modern Manufacturing, 8th Edition</i> . 2009.<br><a href="http://www.nist.gov/mep/upload/FINAL_NAM_REPORT_PAGES.pdf">http://www.nist.gov/mep/upload/FINAL_NAM_REPORT_PAGES.pdf</a>                                                                                                                                                                                      | pp. 1 – 24,<br>39 – 52 | 37 pages |
| 5 | Koten, John. “A Revolution in the Making.” <i>Wall Street Journal</i> . June 10, 2013.<br><a href="http://online.wsj.com/article/SB10001424127887324063304578522812684722382.html">http://online.wsj.com/article/SB10001424127887324063304578522812684722382.html</a>                                                                                                                                               |                        | 9 pages  |

|   |                                                                                                                                                                                                                                                                                                                                                                                                        |  |          |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|
| 6 | Mims, Christopher. "Get Ready: 3D Printing Will Explode Next Year, When Patents Expire". <i>Washington Post</i> .<br><a href="http://www.theatlantic.com/technology/archive/2013/07/get-ready-3d-printing-will-explodenext-year-when-key-patents-expire/278008/">http://www.theatlantic.com/technology/archive/2013/07/get-ready-3d-printing-will-explodenext-year-when-key-patents-expire/278008/</a> |  | 3 pages  |
| 7 | Prah, Pamela. "Has U.S. Manufacturing's comeback stalled?" <i>USA Today</i> . July 30, 2013.<br><a href="http://www.usatoday.com/story/news/nation/2013/07/30/us-manufacturingcomeback-stalling/2599059/">http://www.usatoday.com/story/news/nation/2013/07/30/us-manufacturingcomeback-stalling/2599059/</a>                                                                                          |  | 2 pages  |
| 8 | Dyson, Esther. "3D Fantasies." <i>Project Syndicate</i> . July 24 <sup>th</sup> , 2013.<br><a href="http://www.project-syndicate.org/commentary/how-3d-printing-will-change-the-world-by-esther-dyson">http://www.project-syndicate.org/commentary/how-3d-printing-will-change-the-world-by-esther-dyson</a>                                                                                           |  | 3 pages  |
|   |                                                                                                                                                                                                                                                                                                                                                                                                        |  | 80 pages |

### Week 10 – November 11: The Advanced Manufacturing Revolution II

- Labor policy, offshoring, outsourcing, and robotization
- Securing the manufacturing talent pipeline and the potential of immigration reform
- Industrial ecosystems and the business climate
- Onshoring and insourcing

#### Readings:

|   |                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |                               |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------------------|
| 1 | The Economist. "Special report: Outsourcing and offshoring" 2013.<br><a href="http://www.economist.com/news/special-report/21569572-after-decades-sending-work-across-world-companies-are-rethinking-their-offshoring">http://www.economist.com/news/special-report/21569572-after-decades-sending-work-across-world-companies-are-rethinking-their-offshoring</a>                                                         | 9 articles       | 35 pages                      |
| 2 | Anderson, Chris. <i>Makers: The New Industrial Revolution</i> . 2012.                                                                                                                                                                                                                                                                                                                                                      | pp. 17–32, 52–78 | 43 pages                      |
| 3 | MIT. <i>Report of the MIT Taskforce on Innovation and Production</i> . 2013. (Preview) <a href="http://web.mit.edu/press/images/documents/pie-report.pdf">http://web.mit.edu/press/images/documents/pie-report.pdf</a>                                                                                                                                                                                                     | pp. 1 –30        | 18 pages                      |
| 4 | Basulto, Dominic. "The shot heard 'round the maker world." <i>The Washington Post</i> . May 7, 2013.<br><a href="http://www.washingtonpost.com/blogs/innovations/wp/2013/05/07/the-shot-heard-round-the-maker-world/">http://www.washingtonpost.com/blogs/innovations/wp/2013/05/07/the-shot-heard-round-the-maker-world/</a>                                                                                              |                  | 2 pages                       |
| 5 | Henn, Steve. "As 3-D printing becomes more accessible, copyright questions arise." <i>NPR: All Tech Considered</i> . February 19, 2013.<br><a href="http://www.npr.org/blogs/alltechconsidered/2013/02/19/171912826/as-3-d-printing-become-more-accessible-copyright-questions-arise">http://www.npr.org/blogs/alltechconsidered/2013/02/19/171912826/as-3-d-printing-become-more-accessible-copyright-questions-arise</a> |                  | 3 pages (plus 6 minute audio) |
|   |                                                                                                                                                                                                                                                                                                                                                                                                                            |                  | 101 pages                     |

### Week 11 – November 18: The Information Technology Revolution

- The future of broadband and connectivity
- Cybersecurity

Video: The Information Technology Revolution Video

#### Readings:

|    |                                                                                                                                                                                                                                                                                                                                                                                                       |                                           |            |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------|
| 1  | Mohan, Vivek. "Information Technology – Key Facts, Trends & Implications." 2013                                                                                                                                                                                                                                                                                                                       |                                           | 10 pages   |
| 2  | The Omnibus Broadband Initiative. <i>Connecting America: The National Broadband Plan</i> .                                                                                                                                                                                                                                                                                                            | pp. xi-xv                                 | 5 pages    |
| 3  | The President's Council of Advisors on Science and Technology. <i>Designing a Digital Future: Federally Funded Research and Development in Networking and Information Technology</i> . 2013                                                                                                                                                                                                           | pp. vii – xii                             | 6 pages    |
| 4  | Crawford, Susan. "Merger Made Comcast Strong, U.S. Web Users Weak." <i>Bloomberg</i> . December 25, 2012.<br><a href="http://www.bloomberg.com/news/2012-12-25/merger-made-comcast-strong-u-s-web-users-weak.html">http://www.bloomberg.com/news/2012-12-25/merger-made-comcast-strong-u-s-web-users-weak.html</a>                                                                                    |                                           | 4 pages    |
| 5  | Crawford, Susan. "How AT&T and Verizon Manipulate Your Smartphone." <i>Bloomberg</i> . December 26, 2012.<br><a href="http://www.bloomberg.com/news/2012-12-26/how-at-t-and-verizon-manipulate-your-smartphone.html">http://www.bloomberg.com/news/2012-12-26/how-at-t-and-verizon-manipulate-your-smartphone.html</a>                                                                                |                                           | 4 pages    |
| 6  | Crawford, Susan. "U.S. Internet Users Pay More for Slower Service." <i>Bloomberg</i> . December 27, 2012.<br><a href="http://www.bloomberg.com/news/2012-12-27/u-s-internet-users-pay-more-for-slower-service.html">http://www.bloomberg.com/news/2012-12-27/u-s-internet-users-pay-more-for-slower-service.html</a>                                                                                  |                                           | 5 pages    |
| 7  | Cisco. "Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2012-2017." 2013                                                                                                                                                                                                                                                                                                   | pp. 1 – 6                                 | 6 pages    |
| 8  | Stelter, Brian. "Google said to weigh supplying TV channels." <i>The New York Times</i> . July 16, 2013.<br><a href="http://www.nytimes.com/2013/07/17/business/media/google-is-said-to-mull-internet-cable-service.html?ref=business&amp;pagewanted=print">http://www.nytimes.com/2013/07/17/business/media/google-is-said-to-mull-internet-cable-service.html?ref=business&amp;pagewanted=print</a> |                                           | 3 pages    |
| 9  | The Economist. "Whatever happened to municipal Wi-Fi?" <i>The Economist</i> . July 26 <sup>th</sup> 2013.<br><a href="http://www.economist.com/blogs/babbage/2013/07/wireless-networks">http://www.economist.com/blogs/babbage/2013/07/wireless-networks</a>                                                                                                                                          |                                           | 3 pages    |
| 10 | Center for a New American Security. <i>America's Cyber Future: Security and Prosperity in the Information Age</i> . June 2011.<br><a href="http://www.cnas.org/files/documents/publications/CNAS_Cyber_Volume%20I_0.pdf">http://www.cnas.org/files/documents/publications/CNAS_Cyber_Volume%20I_0.pdf</a>                                                                                             | pp. 1-37                                  | 37 pages   |
| 11 | National Telecommunications and Information Administration. <i>U.S. Broadband Availability: June 2010 – June 2012</i> . May 2013.<br><a href="http://www.ntia.doc.gov/files/ntia/publications/usbb_avail_report_05102013.pdf">http://www.ntia.doc.gov/files/ntia/publications/usbb_avail_report_05102013.pdf</a>                                                                                      |                                           | 15 pages   |
| 12 | OPTIONAL: Crawford, Susan. <i>Captive Audience: The Telecom Industry and Monopoly Power in the New Gilded Age</i> . 2012.                                                                                                                                                                                                                                                                             | pp. 1-14, 33-63, 86-109, 223-232, 254-270 | (96 pages) |
|    |                                                                                                                                                                                                                                                                                                                                                                                                       |                                           | 98 pages   |

## Week 12 – November 25: Case Study Discussion Group – Big Data

- This week’s readings illustrate some of the myriad uses of big data - from national security and law enforcement to helping campaigns, influencing political discourse, and anticipating what you as an individual might need. What other fields might big data be revolutionary in? How might the data used to revolutionize these fields be collected?
- The Snowden affair (of which we've only assigned one article given the likelihood of familiarity with the subject) has illustrated the allure of Big Data to the government. Should we adapt to a "new normal" where there is less of an expectation of privacy for our easily traceable online activities?
- How do we reconcile widespread discomfort with government collection of information with the reality we readily sign away our rights to sell this data when agreeing to privacy policies of generally-accepted-as-benevolent companies such as Google?
- Will information with a historically heightened expectation of privacy - such as healthcare information - retain such status in a digital age?
- Can individuals and companies expect national privacy norms to govern the way they act or are treated when they are operating in cyberspace?

### Readings:

|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |          |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|
| 1 | Davenport, Thomas, Paul Barth, Randy Bean. “How Big Data Is Different.” MIT Sloan Case. <a href="http://sloanreview.mit.edu/article/how-big-data-is-different/">http://sloanreview.mit.edu/article/how-big-data-is-different/</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | 4 pages  |
| 2 | Mayer-Schonberger, Viktor and Kenneth Cukier. “The Rise of Big Data.” <i>Foreign Affairs</i> . 2013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | 11 pages |
| 3 | Selected articles. “Big Data 2013.” <i>The New York Times</i> .<br><a href="http://bits.blogs.nytimes.com/2013/07/30/daily-report-apps-that-anticipate-your-needs/">http://bits.blogs.nytimes.com/2013/07/30/daily-report-apps-that-anticipate-your-needs/</a><br><a href="http://bits.blogs.nytimes.com/2013/06/19/sizing-up-big-data-broadening-beyond-the-internet/">http://bits.blogs.nytimes.com/2013/06/19/sizing-up-big-data-broadening-beyond-the-internet/</a><br><a href="http://bits.blogs.nytimes.com/2013/06/19/from-campaign-war-room-to-big-data-broom/">http://bits.blogs.nytimes.com/2013/06/19/from-campaign-war-room-to-big-data-broom/</a><br><a href="http://bits.blogs.nytimes.com/2013/06/19/in-hot-pursuit-of-numbers-to-ward-off-crime/">http://bits.blogs.nytimes.com/2013/06/19/in-hot-pursuit-of-numbers-to-ward-off-crime/</a> |  | 11 pages |
| 4 | Hardy, Quentin and Somini Sengupta. “Big Data Analysis Adds to Guest Worker Debate.” <i>The New York Times</i> .<br><a href="http://bits.blogs.nytimes.com/2013/07/23/big-data-analysis-adds-to-guest-worker-debate/">http://bits.blogs.nytimes.com/2013/07/23/big-data-analysis-adds-to-guest-worker-debate/</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | 3 pages  |
| 5 | Washingtonian. “Killer App.” January 2012.<br><a href="http://www.washingtonian.com/articles/people/killer-app/">http://www.washingtonian.com/articles/people/killer-app/</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  | 5 pages  |
| 6 | Savage, Charlie. “NSA Said to Search Content of Messages to and From US.” <i>The New York Times</i> . August 8, 2013.<br><a href="http://www.nytimes.com/2013/08/08/us/broader-sifting-of-data-abroad-is-seen-by-nsa.html?pagewanted=all">http://www.nytimes.com/2013/08/08/us/broader-sifting-of-data-abroad-is-seen-by-nsa.html?pagewanted=all</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  | 4 pages  |
| 7 | Singer, Natasha. “When Your Data Wanders To Places You've Never Been.” <i>The New York Times</i> . April 27, 2013.<br><a href="http://www.nytimes.com/2013/04/28/technology/personal-data-takes-a-winding-path-into-marketers-hands.html">http://www.nytimes.com/2013/04/28/technology/personal-data-takes-a-winding-path-into-marketers-hands.html</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | 3 pages  |

|    |                                                                                                                                                                                                                                                                                                                                                                |  |          |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|
| 8  | Singer, Natasha. "Consumer Data, But Not For Consumers." <i>The New York Times</i> . July 21, 2012.<br><a href="http://www.nytimes.com/2012/07/22/business/acxiom-consumer-data-often-unavailable-to-consumers.html">http://www.nytimes.com/2012/07/22/business/acxiom-consumer-data-often-unavailable-to-consumers.html</a>                                   |  | 4 pages  |
| 9  | Kuner, Christopher. "The Transatlantic Divide Over Privacy Rights." <i>Privacy Perspectives</i> . May 20, 2013.<br><a href="https://www.privacyassociation.org/privacy_perspectives/post/the_transatlantic_divide_over_data_privacy_rights">https://www.privacyassociation.org/privacy_perspectives/post/the_transatlantic_divide_over_data_privacy_rights</a> |  | 2 pages  |
| 10 | Hawkins, Gary. "Will Big Data kill all but the biggest retailers." <i>Harvard Business Review Blog Network</i> .<br><a href="http://blogs.hbr.org/cs/2012/09/will_big_data_kill_all_but_the.html">http://blogs.hbr.org/cs/2012/09/will_big_data_kill_all_but_the.html</a>                                                                                      |  | 2 pages  |
|    |                                                                                                                                                                                                                                                                                                                                                                |  | 49 pages |

### Week 13 – December 2: Synthesis and Conclusions

- Cross-pollination between the “revolutions”
- Strategies for communicating with the public and advising policymakers
- Where do we go from here? What have we missed? What could go wrong?
- Tying in all of North America
- Distribution of benefits; the middle class

#### Readings:

|   |                                                                                                                                                                                                                                                                                                                                                                                                                   |           |          |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|
| 1 | Pastor, Robert. "The Future of North America." <i>Foreign Affairs</i> . Volume 87, Number 4. 2008.<br><a href="http://www.american.edu/sis/cnas/upload/ForeignAffairs_Pastor_On_NA_072008.pdf">http://www.american.edu/sis/cnas/upload/ForeignAffairs_Pastor_On_NA_072008.pdf</a>                                                                                                                                 |           | 15 pages |
| 2 | Hinojosa Ojeda, Raul. "The Economic Benefits of Comprehensive Immigration Reform: General Equilibrium Analysis." <i>The Cato Journal</i> . 2011.<br><a href="http://www.naid.ucla.edu/uploads/4/2/1/9/4219226/a53_hinojosa_2012_cato_091511.pdf_published.pdf">http://www.naid.ucla.edu/uploads/4/2/1/9/4219226/a53_hinojosa_2012_cato_091511.pdf_published.pdf</a>                                               | p. 2 – 23 | 22 pages |
| 3 | Blank, Stephen. "North American Solutions." <i>World Policy Blog</i> .<br><a href="http://www.worldpolicy.org/blog/2013/06/17/north-american-solutions">http://www.worldpolicy.org/blog/2013/06/17/north-american-solutions</a>                                                                                                                                                                                   |           | 3 pages  |
| 4 | Erlanger, Steven. "Conflicting Goals Complicate an Effort to Forge a Trans-Atlantic Trade Agreement". <i>New York Times</i> . June 12, 2013.<br><a href="http://www.nytimes.com/2013/06/13/business/global/to-create-jobs-europe-pushes-for-trade-deal-with-us.html?pagewanted=all">http://www.nytimes.com/2013/06/13/business/global/to-create-jobs-europe-pushes-for-trade-deal-with-us.html?pagewanted=all</a> |           | 4 pages  |
| 5 | Gusenbauer, Alfred. "The Transatlantic Free Trade Imperative". <i>Project Syndicate</i> . June 24, 2013.<br><a href="http://www.project-syndicate.org/commentary/the-transatlantic-free-trade-imperative-by-alfred-gusenbauer">http://www.project-syndicate.org/commentary/the-transatlantic-free-trade-imperative-by-alfred-gusenbauer</a>                                                                       |           | 3 pages  |
|   |                                                                                                                                                                                                                                                                                                                                                                                                                   |           | 47 pages |

### Week 14 – December 9: Student Presentations

### Week 15 – December 16: Student Presentations

## **VI. Discussion Groups**

During class at three points in the semester, the teaching assistants will lead a discussion group focused on a specific case study related to the most recent lectures. These classes will have additional required reading, but fewer total pages. Participation on these days will be an integral part of the final grade.

Prior to these sessions, students are required to complete the additional reading and prepare a 1-page primer in preparation for focused discussion. These 1-page primers must be posted to the course website by midnight on Friday before the discussion group day. Students will be assigned to read and respond to a classmate's memo over the weekend and post a half-page reply before class.

## **VII. Policy Memo I – Policy Recommendation**

For the first policy memo, students will be assigned to argue a position to the White House Chief of Staff on a specific issue in one of the four “revolutions”. For this assignment students will draft a written memo and deliver a brief presentation to the class.

The memo should clearly lay out the context and importance of the issue, the recommended policy course of action, and the evidence and rationale for the recommended action. A list of possible topics follows, but students are also free to propose additional policy issues; however topics not listed below must be approved by the professor 2 weeks prior to your scheduled presentation.

During the first week of class, students will sign up online to write their first memo on a topic in one of the revolutions; students will then be assigned to one of the revolutions to ensure an even distribution. Students will present their policy memo in class on the day the revolution is discussed in class (either Week 3, 6, 9, or 10). Students will be given 5 minutes for their presentation and may optionally use PowerPoint slides. A written memo, 3-4 pages in length, double-spaced, 12-point Times New Roman, 1” margins is also due on the Friday before the presentation.

Students should draw heavily from the assigned readings and class discussions, but should also feel free to consult additional credible sources. The policy memos should strive for realism in all manners *except* these memos should also include citations for all referenced material. Citations to reputable sources should be given in endnotes.

### **Suggested Policy Memo Topics**

#### ***Energy***

- Should exports of natural gas from North America be encouraged or discouraged?
- What should policymakers do to make natural gas fracking safer?
- What actions can policymakers take to reap the biggest returns from the natural gas boom for the North American public?
- Should federal policy be adopted to reduce greenhouse gas emissions? If so, why and how can this be done in a politically feasible manner?

- What actions, if any, should policymakers take to increase North American energy security after the natural gas boom has run its course?

#### *Life Sciences*

- The United States' unique insurance system has subsidized drug development over the last half century. With the advent of healthcare reform and a changing payments system, how do you see the role of the United States as driver of innovative therapies evolving? Should the rest of the world play a more active role?
- How should federal policy encourage the development of new drugs?
- Should federal policy encourage the proliferation of generic drugs?
- In the wake of the Affordable Care Act, could additional healthcare reform enable greater utilization of recent life sciences breakthroughs?
- What new ethical issues in the life sciences does federal policy need to address?

#### *Advanced Manufacturing*

- Should government policies help foster innovation in advanced manufacturing, and if so, which ones?
- What policies, if any, can increase the pool of workers prepared for advanced manufacturing jobs?
- What should the role of the federal government be in fostering an “industrial ecosystem” and desirable climate for business?
- Should the federal government support the manufacturing sector of the economy, and if so, how?

#### *Information Technology*

- How can citizens control the disclosure and dissemination of their personal information in a digital age?
- Compare and contrast perceptions of usage of personal information/data when used by the government for security and law enforcement versus by companies for targeted advertising
- Identify three enduring issues or concerns of Internet governance that a Senate staffer drafting the charter for a "Federal Internet Commission" should be sure to enshrine in an authorizing statute?
- What role should the government play in subsidizing or mandating the development of a nationwide broadband infrastructure? Should there be different rules for wired and wireless? How many competitors are needed to ensure a competitive yet not-unnecessarily-duplicative marketplace?

### **VIII. Policy Memo II – National Strategy**

For the second policy memo, students will be tasked with developing a national strategy pertaining to a major area of science and technology (S&T) policy for a Presidential cabinet briefing. The memo should argue how well-designed federal public policy in the next 3-5 years could enable (North) America to capitalize on the possibilities afforded by the chosen S&T area.

The four S&T “revolutions” that the course focused on (energy, life science, advanced manufacturing, and information technology) may be chosen for the final project, but students should go beyond the assigned readings in developing their presentation by consulting additional



resources. If students choose a different topic area, they must receive approval from the professor by November 1<sup>st</sup>.

During the final two weeks of the semester, students will give a 10 minute presentation and submit a 10-12 page, double-spaced, 12-point Times New Roman, 1" margins memo. Citations to reputable sources should be given in endnotes. This memo should include three sections:

1. An explanation of “the problem” your policy recommendations will address. This is your thesis and it belongs in the first paragraph. (*e.g. there are too few students majoring in the STEM fields to fully take advantage of the advanced manufacturing revolution.*)  
**Recommended page length: 1 page or less**
2. A brief introductory overview of the topic area and the issue you will address. (*e.g. the importance of human capital formation and advanced manufacturing. In this instance, the topic area is advanced manufacturing, and the issue is human capital formation.*)  
**Recommended page length: 2-3 pages**
3. Your policy recommendations. Your memo should include up to five near-term (relevant for the next 3-10 years), practical policy recommendations. Below are a few guiding questions to think about as you develop your recommendations:
  - How will your recommendations address the problem that you have identified?
  - Who will implement these policies?
  - Why are these policy recommendations superior to alternatives?
  - Have policies been implemented elsewhere that address a similar problem, and can these policies be adopted in the United States?

**Recommended page length: 6-8 pages**

The presentation that accompanies this memo should follow the format of the paper and focus on the justifications for your policy recommendations. You have only 10 minutes of speaking time so you must make sure that you effectively convey all of the relevant information in that time and be prepared for questions after the presentation.

## **IX. Students with Disabilities**

Assistance for students with disabilities is available through the Graduate Center. It is the policy of the Graduate Center to provide auxiliary aids and services and to make appropriate academic accommodations needed by students with disabilities. The Graduate Center provides readers/library assistants, sign-language interpreters, notetakers, scribes, and other auxiliary services as needed. Students who wish to request accommodations or have questions about Graduate Center facilities, auxiliary aids and services, or any Graduate Center academic matters should consult with Ms. Sharon Lerner, Director of Student Affairs; Miss Elise M. Perram, Associate Director of Student Affairs; or the Vice President for Student Affairs. Discussions and information regarding a student’s disability will be kept confidential unless a student requests otherwise. Appropriate documentation to obtain accommodations is required to be provided to the Student Affairs office. This documentation must come from a qualified professional and provide information on diagnosis/specific disability conditions, functional limitations in the

higher education setting, and recommended accommodations. The purpose of this documentation is to enable us to determine, together with the student seeking accommodations, the most appropriate accommodations for the student. Students are encouraged to contact the Office of Student Affairs to discuss present and future needs to facilitate effective planning. (Source: Graduate Center Student Handbook [http://www.gc.cuny.edu/CUNY\\_GC/media/CUNY-Graduate-Center/PDF/Publications/Student\\_Handbook\\_web.pdf](http://www.gc.cuny.edu/CUNY_GC/media/CUNY-Graduate-Center/PDF/Publications/Student_Handbook_web.pdf) )